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IMPROVING COLLEGE TEACHING THROUGH ADAPTING LEARNING STYLES THEORY INTO PRACTICE

by

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Learning styles theory on how people learn has been known for at least 25 years. Yet, for the most part, college teachers still dispense information in the traditional lecture/exam method without regard for the differing learning styles of their students. This study, conducted at North Central Technical College in Mansfield, Ohio, demonstrates the feasibility of adapting learning styles theory to college students' learning preferences. A simplified version of McCarthy's 4MAT system was implemented in two General Studies courses. Results demonstrated significant improvement in student attitudes after their experience with the 4MAT model. Conclusions support the effectiveness of teaching to learning styles at the college level, in terms of improved student attitudes and performance, and increased teacher satisfaction and effectiveness in the classroom. Recommendations include institution-wide training in and support for teaching methods which accommodate differing learning styles of students.

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Conceptual Framework

> College teaching and learning as an activity, is undoubtedly one of the most complex interactions in which human beings are purposefully engaged.[1]

In regard to this complex activity, more and more attention is being focused on the craft of teaching -- "to give instruction ... to help to learn,"[2] as opposed to making certain that faculty members are knowledgeable in their content areas. Perhaps this is long overdue. Elkhardt bemoans the fact that not one teacher in a hundred really knows anything about how human beings learn, despite 25 years of research.[3] Even feels its high time to bring educational practice in higher education out of the "Dark Ages," that there is sufficient theory and research into learning styles to adopt this theory into practice in colleges.[4] And Gregorc strongly feels the time has come for higher education to teach more than subject matter; they should accept the challenges of individual differences and face squarely the need to help teachers and students understand how and why human beings learn.[5]

Yet, for the most part, college teachers go on routinely dispensing the same lectures and tests, assigning the same papers and projects to their students without regard for their students' individual learning abilities and preferences. This despite student populations made up more and more of non-traditional students including an increasing number of older, diverse adults. Perhaps (and hopefully) the era of this benignly mindless mass dispensation of information is coming to a close; certainly as competition increases for students, colleges will find themselves challenged to meet individual needs. Continuing to use ineffective teaching methods will increasingly be counterproductive to students and to institutions as well.

This project was an attempt to use, on a very practical level, some of the latest research on how (and why) human beings learn in a college setting. The conclusion: using this research on learning styles, is a more effective way to teach in college than the traditional lecture/exam approach and should be implemented in higher education if colleges are to keep pace with the demands of the 80's.

Rationale of Learning Styles

James feels that teachers cannot plan the instructional process without regard for what they presume is happening within the learner. They must have personal answers to the questions, "How do people learn?" and "What is different about different learners?"[6] Beacham states that educators now recognize that students bring to the learning process certain innate, inborn, and acquired physical, personal and social traits and characteristics. These determine how much and what kind of success they will find in learning and are called "learning styles." They are inborn, natural predispositions. They are based on four precepts:

1. Individuals learn differently;
2. It is possible to determine how individuals learn;
3. It is the responsibility of the teacher to consider learning style preference; and
4. It is the responsibility of the student to use his own knowledge about his learning style in the learning environment.[7]

The basic background of learning style theory begins with the human brain. Hart states that all learning takes place there, yet educators know nothing about it and don't appear interested. We spend billions on education,

subject students to years of it, yet teachers don't know what they're doing, why they're doing it, or what they should be doing to help students learn.[8] Research shows that we achieve the majority of our adult IQ by age 4. But our brains only achieve maximum weight by age 30, and (interestingly enough for older adult students) the neurological structure for perception of information (connections in the corpus collosum) isn't at its maximum until age 40! Our 10 billion brain cells are equally divided between two hemispheres - the right and the left, which are interconnected by a neural bridge — the corpus collosum. Each hemisphere appears to have its own private sensations, perceptions, thoughts, feelings and memories — in short, its own inner visual world.[9] The left side of the brain controls the right side of the body, as well as speech, calculations, and the recognition of names. It is involved in analytic, logical, sequential thinking, especially in verbal and mathematical functions. The right hemisphere controls the left side of the body and is involved in visual-spatial perception and the recognition of faces, and in art, music, and non-verbal thought and intuition.[10] In educational terms this means the left brain is involved in the "3R's" and computers, and the right brain in art, music, dance, physical education and geometry. So the left brain is catered to in terms of the "serious" school subjects, while the right brain is used for the "frills" — except that the right brain also has reasoning capacity and considerable perceptual insight that is superior to the left for certain things.[11]

Learning Styles and College Students

The essential point of all this is that some persons tend to be left-brain dominant while others are right-brain dominant. Our educational

system as a whole (and the college setting in particular) is almost entirely left-brain oriented, and left-brain learners are successful and rewarded in this system. Right-brain learners are no less intelligent or skillful, but our educational system does not recognize or reward their capabilities. Attention to learning styles is important because research shows student measures of creativity actually decline as a student proceeds through school because of right-brain neglect.[12] Hunter says that traditional education is extravagantly individualized for teachers (and left-brain ones at that) rather than students, and that this cost is astronomical when considering dollars spent and student failure.[13] Further, research shows that using both hemispheres on verbal and non-verbal tasks improved performance on both, and improved IQ scores too.[14]

Bernice McCarthy differentiates learners into 4 distinct types: Type One learners perceive through concrete experience with senses and feelings. They learn better through discussion, listening and interacting. Type Two learners perceive through abstract concepts by thinking. They (and only they) learn best through lectures and examination of data. Type Three learners process information through active experimentation and learn best through hands-on activities. Type Four learners perceive through concrete experience, and process information through active experimentation by doing. They learn best through self-discovery methods. McCarthy advises teachers to teach all four types of learners with all four methods.[15] Bogan recommends giving equal time to each hemisphere. Greater right brain participation would involve more lab and field experience at the expense of lectures.[16] Gray advises teachers to plan lessons and select materials so that they don't continually bypass one hemisphere or the other.[17] Christian discusses routinely "mapping" the

learning styles of all students during the admissions process, or only testing for learning styles if problems are encountered.[18] Gurley cites findings which suggest improvements in student achievement when different instructional methods are used and that attrition rates are reduced.[19] So all the evidence supports attempts to use more varied teaching methods in order to reach more students successfully. The possibilities and implications for higher education are indeed exciting and almost endless. An attempt at applying this knowledge is the focus of the next section of this paper.

Implementation

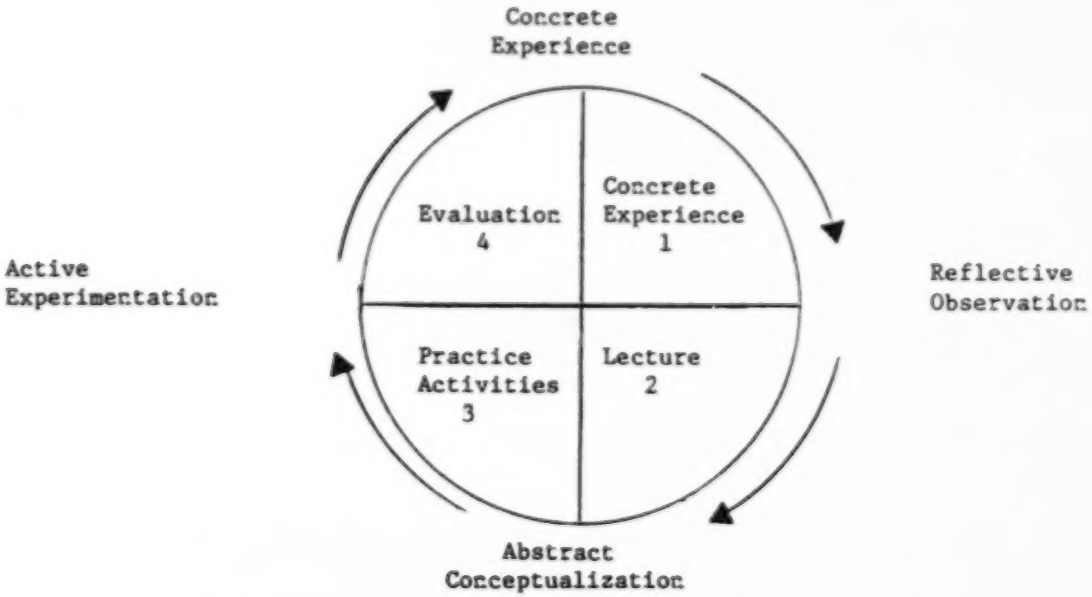
Program Setting

North Central Technical College is a small (1800 students) 2 year institution located in North Central Ohio. It offers 15 Associate Degrees and 2 Certificates in 17 different technologies. The student population is very diverse. Students range in age from 17 to some students in their 60s -- the average age is 26. Approximately twice as many students attend during the day as attend in the evening. The majority of students work either full or part-time in addition to attending classes. A few students begin taking classes during their senior year in high school while others already have a 4 year college degree. In terms of achievement about 100 of the 700 recently graduated traditional students fall into a high achievement range with ACT scores above 21. Around 200 fall into the average category with ACT scores between 16 and 20. About half of the students fall into the marginal range with ACT scores between 1 and 15. This is a significant proportion of the student body and probably the major focus of interest in accommodation and retention efforts.

NCTC is a progressive institution whose rapid growth can be attributed to a number of factors. However its ability to maintain a competitive edge may depend on its responsiveness to new situations -- increasing costs and projected declines in prospective students due to population declines. The background of most instructors, particularly in the technologies is not in education at all, so that the repertoire of many teachers at NCTC is limited. Abraham Maslow said, "If the only tool you have is a hammer, you tend to treat everything as if it were a nail."[20] For teachers at any level to limit themselves to one or two teaching techniques is very similar — they fail to recognize and honor the differing needs of individual students. This project was an attempt to put as wide a variety of tools as possible at the author's disposal in order to meet the needs of future students.

The Simplified 4MAT Model

As stated previously, McCarthy feels that all 4 types of learners need to be taught using all 4 methods.[21] A simplified version of McCarthy's 4MAT model was subsequently adopted as the model to be used for the project.



In this model the teaching and learning sequence involves beginning with a concrete experience, followed by the presentation of new material. This is followed by some practice activities to give students an opportunity to use the new material, and finally by evaluation. It should be noted that 2 basic elements, lecture and evaluation are still parts of the model, but quadrants one and three, concrete experience and practice activities help the right-brain learners to master the skills or concepts involved. Further, this system moves through the learning cycle in sequence and the sequence is a natural learning progression. In this way students come to accept their strengths while furthering their ability to learn in alternate modes as well. All students will "shine" at different places in the cycle, so they will learn from each other.

Gregorc suggests some specific instructional activities for the 4 types of learners.[22] Type One learners are responsive to movies, group discussions, short lectures with discussions, and audio-visual materials. Type Twos like extensive reading assignments, substantive lectures, audio tapes and think sessions. Type Threes need workbooks, manuals, demonstrations, programmed instruction, hands-on activities and field trips. And Type Fours work well with games and simulations, independent study, problem solving assignments, contract activity packages and special reading assignments. Using a variety of these activities offers students numerous options for achieving mastery while working within the realm of their learning styles.

The Project

The purpose of the project was to attempt to relate learning styles theory to adult students in a technical college in order to improve student

attitudes and performance in 2 selected General Studies courses which the author teaches on a regular basis — Technical Communications 102 and Applied Psychology 151. Emphasis was placed on completing the cycle — concrete experience, lecture, practice activities and evaluation — for each unit of study in each course. Examples for one unit of study in each course, one teaching a skill the other teaching a concept can be found in Appendix A.

Students were given the Kolb Learning Styles Inventory at the beginning of the course and a specially designed Student Attitude Survey at the beginning and again at the end of each course. The results of the study are provided in Appendix B.

Conclusions and Recommendations

> In the next 10 or 15 years, we will almost certainly see strong measures to make schools responsible for thinking through what kind of learning methods are appropriate for each (student). We will almost certainly see tremendous pressures...for results focused education and for accountability in meeting objectives set for individual students.[23]

Conclusions

Four major conclusions were reached as a result of this study. First, it appears evident that the student population at NCTC is in fact not in tune with or responsive to the traditional Type Two lecture and exam teaching style, (See Appendix C) although obviously more extensive research would be needed to properly validate this assertion. However, even this limited data certainly suggests the need for examining the current teaching methodology if the needs of the student body are to be effectively met.

Second, it appears that it is possible to modify teaching strategies to accommodate learning styles without completely starting over in terms of preparation. It would seem that making these kinds of modifications requires giving up a certain amount of control in the classroom — an activity that makes some teachers uneasy. However, the author found this loss of control a small price to pay for the increased student interest, enthusiasm, and productivity.

Third, it appears that (at least from the author's experience) the committment to and the satisfaction in teaching increased as the repertoire of teaching strategies expanded. Awareness of the uniqueness of each student was enhanced, along with success in meeting student needs more effectively. This increased student and teacher satisfaction can only be a benefit in the effort to attract and retain more students in the increasingly competitive college market.

And last, the author found that the support and backing of administrative personnel was excellent for taking the risk of being innovate and creative in the college classroom. The author also found lots of faculty interest in the project, and was frequently asked to share the results with interested faculty members. In fact, faculty members may soon find themselves challenged to make innovative changes if they are to remain secure in their positions. As has been stated previously, the competition for students will be more intense in the future (as will be the competition for teaching positions) and will involve the recruitment of older, diverse adults and other non-traditional students from the community. Appropriate teaching techniques must be developed to serve and retain these students.

Recommendations

Colleges in this country strive mightily to be on the "cutting edge" in terms of current research and up-to-date information. Faculty attend conferences and participate in staff development programs in order to remain knowledgeable in their fields. Would that as much time and effort were put forth in perfecting teaching methodology. Colleges and universities, which should be avant garde in regard to teaching strategies, often lag behind other educational systems when it comes to the art, craft, and science of teaching per se. It doesn't have to be this way. The aforementioned study, just one attempt to update teaching methods to concur with research on learning preferences, nonetheless demonstrates the feasibility of such attempts.

The first step is for college administrators to focus on improving instruction via concentration on applying brain research on how human beings learn. Administrators and faculty supervisors must be knowledgeable if they are to encourage and support faculty in their efforts to change. Successful implementation of this kind of program cannot be a one-shot faculty development program. Follow-up discussions and rap sessions in department meetings is also needed. Observations of faculty performance could also focus on innovative changes in teaching methods.

Colleges cannot afford to overlook this important component of the success of any institution, and must remain in the forefront in terms of instructional methods, as they do in regard to programs, equipment, research, and all the other aspects of successful and growing organizations. The research on how people learn is crucial and will not go away just because higher education chooses to ignore it. Colleges have the opportunity right now to meet the challenge of the new instructional technology for the benefit of teachers and students alike.

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APPENDIX A
102 Technical Communications
Unit One: Writing Instructions

1. Concrete experience: The students drew a map from the campus to their homes. Using the maps, they then wrote out a set of written instructions on how to get to their homes. They then exchanged sets of instructions to see if they could reproduce the maps accurately.

2. Lecture: topics included:

   a) locational and operational instructions and the differences between them
   b) important factors in writing instructions
   c) procedures for writing instructions
   d) the planning process for writing instructions
   e) a sub-topic: using visual materials in technical writing

3. Practice activities:
   a) Students were asked to bring in examples of instructions for analysis; i.e., assembly instructions for constructing household items, etc.
   b) Students examined samples they brought in for correct use of visuals.
   c) Students examined and analyzed different examples of good and bad instructions via overhead transparencies, and in handouts during small group discussions.
   d) Students experimented with improving samples of both types of writing by clearer writing, use of visuals or both.

4. Evaluation: Students were asked to do a plan sheet and turn in, complete with visuals, a set of instructions for grading.

151 Aplied Psychology
Unit: Death and Dying

1. Concrete experience: Students were asked to write their own obituary notices - assuming that they were struck by lightning as they left the building after class! (to focus on life so far) They were given typical death notices as they usually appear in the local newspaper as models.

2. Lecture:
   a) stages in the dying process
   b) stages in grief process
   c) the "American Way of Death"
   d) coming to terms with the "final state of growth"

3. Practice activities:
   a) Students viewed a filmstrip on Death and Dying and discussed in small groups their reactions to the filmstrip and the obituary-writing assignment.
   b) Students then wrote a second version of their obituary assuming they will die in their sleep at age 90 (to focus on meaningful ways to spend remaining years).

4. Evaluation: Brief one page reaction paper on the obituary writing experience or an objective test covering the lecture and discussion material.

APPENDIX B

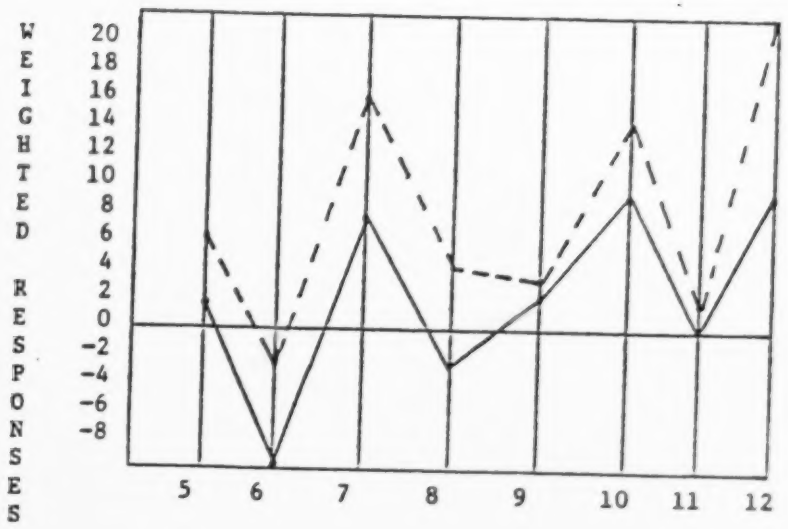
Technical Communications		Applied Psychology	
Type Ones	1	Type Ones	1
Type Twos	0	Type Twos	0
Type Threes	4	Type Threes	1
Type Fours	4	Type Fours	4

Combined

Type Ones	2
Type Twos	0
Type Threes	5
Type Fours	8

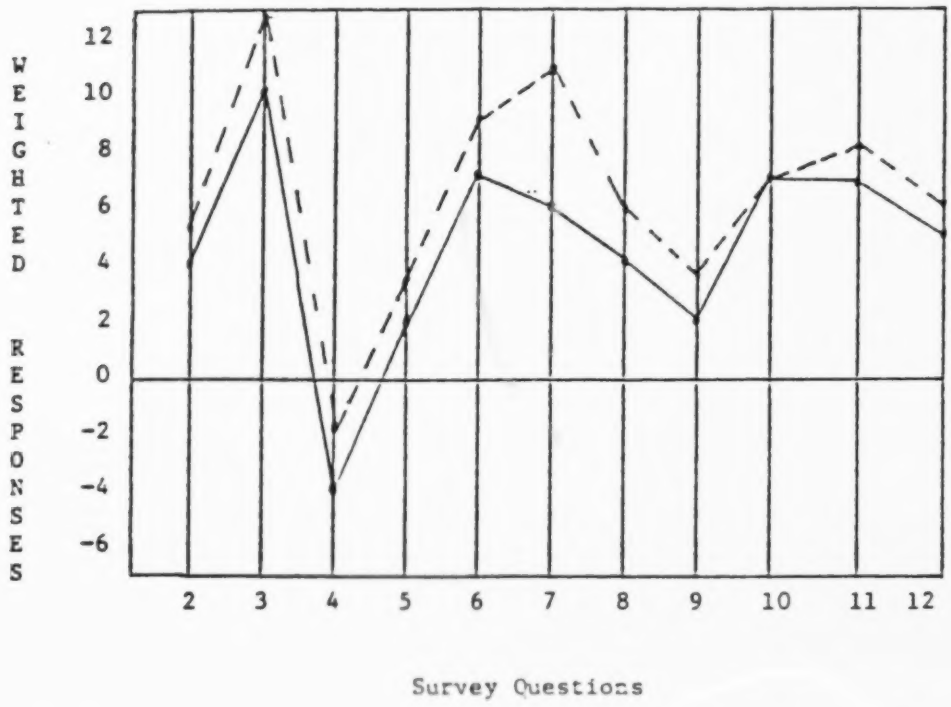
Learning Styles of Students in Project

APPENDIX C



Graph Showing Improvement in Student Attitude Upon Completion of Technical Communications 102 Using 4MAT Model

APPENDIX C



Graph of Improvement in Student Attitude Upon Completion of Applied Psychology 151 Using 4MAT Model